

Claims:

1. (Currently Amended) A dynamic structural dimple panel, comprising:
a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, wherein the space between the dimples is curved, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;
a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples; and
wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.
2. (Currently Amended) A dynamic structural dimple panel, comprising:
a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, wherein the space between the dimples is curved, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;
a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, the compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples, said dimple layer being a memory material which allows a size of a passage and/or a distance between the reinforcing layer and the dimple layer to be changed when the memory material undergoes a change in temperature; and
wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

3. (Withdrawn) A dynamic structural dimple panel, comprising:

a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;

a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, the compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples; and

strand material routed through said layers to mechanically interlock the layers.

4. (Withdrawn) A dynamic structural dimple panel, comprising:

a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;

a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, the compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples, wherein at least one of the dimples has an opening therethrough and at least one of the reinforcing layers includes an extension extending through the opening.

5. (Currently Amended) A multilayer dimple panel, comprising:

a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, said dimples being spaced from one another, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel, and the space between the dimples is curved.

6. (Currently Amended) A multilayer dimple panel, comprising:
a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, said dimples being spaced from one another, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples, said dimple layer being a memory material which allows a size of a passage and/or a distance between both the first and second reinforcing layers and the dimple layer to be changed when the memory material undergoes a change in temperature; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel, and the space between the dimples is curved.

7. (Withdrawn) A multilayer dimple panel, comprising:
a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples; and

strand material routed through said layers to mechanically interlock the layers.

8. (Withdrawn) A multilayer dimple panel, comprising:
a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;
a first reinforcing layer connected to said dimple layer; and
a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples, wherein at least one of the dimples has an opening therethrough and at least one of the reinforcing layers includes an extension extending through the opening.
9. (Withdrawn) A dynamic structural dimple panel comprising:
a dimple layer having spaced apart dimples extending from a first side and a second side, the dimples being spaced to form a dimple layer region where the dimple layer region is curved relative to the dimples; and
a reinforcing layer being configured to connect with the dimples of the dimple layer, the reinforcing layer connected to the dimple layer by the dimples, the curved dimple layer region of the dimple layer providing compliance of the dimple layer accommodating loading of the panel to distribute stresses placed on the connection of the dimples.
10. (Withdrawn) A dynamic structural dimple panel as recited in Claim 9, wherein the curved region interconnects the dimples.
11. (Withdrawn) A dynamic structural dimple panel as recited in Claim 9, wherein at least one of the dimples has a passage therethrough.
12. (Withdrawn) A dynamic structural dimple panel comprising:

a dimple layer having a plurality of dimples extending from a first side and a second side, the plurality of dimples being spaced apart to form a dimple layer region on the dimple layer where the dimple layer region includes a plurality of corrugations in order to provide dynamic compliance for the dimple layer; and

a reinforcing layer being configured to connect with the dimples of the dimple layer, the reinforcing layer connected to the dimple layer by the dimples, the compliance of the dimple layer accommodating loading of the panel to distribute stresses placed on the connection of the dimples.

13. (Withdrawn) A dynamic structural dimple panel as recited in Claim 12, wherein the plurality of corrugations interconnect the plurality of dimples.

14. (Withdrawn) A dynamic structural dimple panel as recited in Claim 12, wherein at least one of the dimples has a passage therethrough.

15. (Currently Amended) A dynamic structure panel ~~as recited in Claim 1~~, comprising:

a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, wherein the space between the dimples is corrugated, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;

a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

16. (Canceled)

17. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein the dimples are uniformly shaped with nonuniform spacing.
18. (Previously Presented) A dynamic structural panel as recited in Claim 1, wherein the dimples are nonuniformly shaped with uniform spacing.
19. (Previously Presented) A dynamic structural panel as recited in Claim 1, wherein the dimples are nonuniformly shaped with nonuniform spacing.
20. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein a cavity formed between the dimples and the reinforcing layer is filled with a dynamic material.
21. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein at least one dimple is varied in shape from other dimples to accommodate and distribute structural, mechanical and pressure loads internal and external to the dimple panel.
22. (Currently Amended) A dynamic structure panel ~~as recited in Claim 1,~~
comprising:
a first dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;
a reinforcing layer being configured to connect with the dimples of the first dimple layer, said reinforcing layer connected to said dimple layer by said dimples, compliance of said dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples;
~~further including~~ a second dimple layer having a plurality of dimples extending from one side of said second dimple layer, the dimples being non-uniformly spaced from one

another said dimples of said second dimple layer connected to said reinforcing layer on the side of said reinforcing layer opposite said first dimple layer, the dimples of said first and second dimple layers being misaligned from one another to prevent transmission of loads from one dimple layer to another; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

23. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein said dimples are flexible to store energy to accommodate and distribute structural, mechanical and pressure loads internal and external to the dimple panel.

24. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein the reinforcing layer is generally planar.

25. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein the reinforcing layer is nonplanar.

26. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein at least one of the dimples includes a fastening portion and the reinforcing layer includes a complementary portion receiving the fastening portion wherein planar adjustments between the dimple layer and the reinforcing layer can be made.

27. (Currently Amended) A dynamic structure panel ~~as recited in Claim 1,~~
comprising:

a dimple layer having a plurality of dimples extending from one side of the dimple layer, said dimples being spaced from one another and not touching, said dimple layer absorbing, storing, dissipating or distributing energy to make said dimple layer compliant;

a reinforcing layer being configured to connect with the dimples of the dimple layer, said reinforcing layer connected to said dimple layer by said dimples, compliance of said

dimple layer accommodating loading of said panel to distribute stresses placed on the connection of said dimples;

~~further including~~ a biasing element located between the dimple layer and the reinforcing layer, the biasing element surrounding the at least one dimple and biasing the dimple layer away from the reinforcing layer; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

28. (Previously Presented) A dynamic structure panel as recited in Claim 1, wherein at least one of the dimples is collapsible.

29. (Previously Presented) A dynamic structure panel as recited in Claim 1, further including a second dimple layer having a plurality of dimples extending from one side of said second dimple layer, said second dimple layer being compliant, said dimples of said second dimple layer connected to said reinforcing layer on the side of said reinforcing layer opposite said first dimple layer.

30. (New) A multilayer dimple panel, comprising:
a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, said dimples being spaced from one another, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel, and the space between the dimples is corrugated.

31. (New) A multilayer dimple panel, comprising:

a first dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said first dimple layer;

a second dimple layer having a plurality of dimples extending from one side of said second dimple layer, the dimples being non-uniformly spaced from one another said dimples of said second dimple layer connected to said reinforcing layer on the side of said reinforcing layer opposite said first dimple layer, the dimples of said first and second dimple layers being misaligned from one another to prevent transmission of loads from one dimple layer to another;

a second reinforcing layer connected to said second dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

32. (New) A multilayer dimple panel, comprising:

a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples;

a biasing element located between the dimple layer and the reinforcing layers, the biasing element surrounding the at least one dimple and biasing the dimple layer away from the reinforcing layers; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

33. (New) A multilayer dimple panel, comprising:

a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, said dimples being spaced from one another, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples, said dimple layer being a memory material which allows a size of a passage and/or a distance between both the first and second reinforcing layers and the dimple layer to be changed when the memory material undergoes a change in temperature; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel, and the space between the dimples is corrugated.

34. (New) A multilayer dimple panel, comprising:

a first dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

first reinforcing layer connected to said first dimple layer;

a second dimple layer having a plurality of dimples extending from one side of said second dimple layer, the dimples being non-uniformly spaced from one another said dimples

of said second dimple layer connected to said reinforcing layer on the side of said reinforcing layer opposite said first dimple layer, the dimples of said first and second dimple layers being misaligned from one another to prevent transmission of loads from one dimple layer to another;

a second reinforcing layer connected to said second dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.

35. (New) A multilayer dimple panel, comprising:

a dimple layer having a plurality of first dimples extending from a first side thereof and a plurality of second dimples extending from a second side thereof, the first and second dimples being misaligned from one another and non-touching, said dimple layer being compliant;

a first reinforcing layer connected to said dimple layer;

a second reinforcing layer connected to said dimple layer, the compliance of said dimple layer accommodating loading of said multilayer dimple panel to distribute stresses placed on the connection of said dimples, said dimple layer being a memory material which allows a size of a passage and/or a distance between both the first and second reinforcing layers and the dimple layer to be changed when the memory material undergoes a change in temperature;

a biasing element located between the dimple layer and the reinforcing layer, the biasing element surrounding the at least one dimple and biasing the dimple layer away from the reinforcing layer; and

wherein the spacing of said dimples relative to one another increases or decreases upon loading of said panel.